# User Manual

Revision 1.130
English

## M-Bus Master/ BACnet/IP Slave - Converter

(Order Codes: HD67056-B2-20, HD67056-B2-40, HD67056-B2-80, HD67056-B2-160, HD67056-B2-250)

## M-Bus Master/ BACnet MS/TP Slave - Converter

(Order Codes: HD67056-MSTP-20, HD67056- MSTP -40, HD67056- MSTP -80, HD67056- MSTP -160, HD67056- MSTP -250)

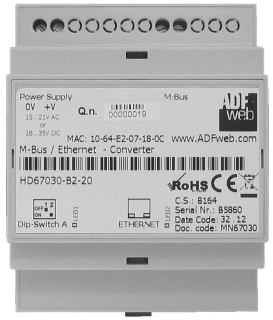
For Website information:
www.adfweb.com?Product=HD67056-B2

For Price information:
www.adfweb.com?Price=HD67056-B2-20
www.adfweb.com?Price=HD67056-B2-40
www.adfweb.com?Price=HD67056-B2-80
www.adfweb.com?Price=HD67056-B2-160
www.adfweb.com?Price=HD67056-B2-250

**Benefits and Main Features:**

- Very easy to configure
- Up to 1500 BACnet Objects
- Temperature range: -40°C/85°C (-40°F/185°F)

*HD67056-B2*



Other Products

For others M-Bus products see also the following link:

**Converter - M-Bus /**
www.adfweb.com?Product=HD67021 **(RS232)**
www.adfweb.com?Product=HD67022 **(RS485)**

**Analyzer / Scanner /Sniffer M-Bus**
www.adfweb.com?Product=HD67031

**M-Bus – Repeater - Isolator**
www.adfweb.com?Product=HD67032M

**Converter - M-Bus / Modbus Slave**
www.adfweb.com?Product=HD67029M-232 **(on RS232)**
www.adfweb.com?Product=HD67029M-485 **(on RS485)**

**Gateway M-Bus / Modbus TCP**
www.adfweb.com?Product=HD67044

**Gateway M-Bus / CANopen**
www.adfweb.com?Product=HD67051-B2

**Gateway M-Bus / PROFIBUS**
www.adfweb.com?Product=HD67053M

**Gateway M-Bus Concentrator**
www.adfweb.com?Product=HD67054M

**Gateway M-Bus Slave / Modbus RTU master**
www.adfweb.com?Product=HD67059M-232

Do you have an your customer protocol?
www.adfweb.com?Product=HD67003

Do you need to choose a device? do you want help?
www.adfweb.com?Cmd=helpme

## INDEX:



## UPDATED DOCUMENTATION:

Dear customer, we thank you for your attention and we remind you that you need to check that the following document is:

- Updated
- Related to the product you own

To obtain the most recently updated document, note the "Document code" that appears at the top right-hand corner of each page of this document.

With this "Document Code" go to web page www.adfweb.com/download/ and search for the corresponding code on the page. Click on the proper "Document Code" and download the updates.

## REVISION LIST:

| Revision | Date | Author | Chapter | Description |
|---|---|---|---|---|
| 1.100 | 04/07/2013 | Fl | All | Type HD67056-MSTP |
| 1.110 | 14/10/2013 | Fl | All | Software changed (v1.102) |
| 1.120 | 27/02/2014 | Fl | All | Software changed (v1.104) |
| 1.130 | 27/05/2014 | Fl | All | Software changed (v1.200) |

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## SECURITY ALERT:

### GENERAL INFORMATION

To ensure safe operation, the device must be operated according to the instructions in the manual. When using the device, legal and safety regulation are required for each individual application. The same applies also when using accessories.

### INTENDED USE

Machines and systems must be designed so the faulty conditions do not lead to a dangerous situation for the operator (i.e. independent limit switches, mechanical interlocks, etc.).

### QUALIFIED PERSONNEL

The device can be used only by qualified personnel, strictly in accordance with the specifications.
Qualified personnel are persons who are familiar with the installation, assembly, commissioning and operation of this equipment and who have appropriate qualifications for their job.

### RESIDUAL RISKS

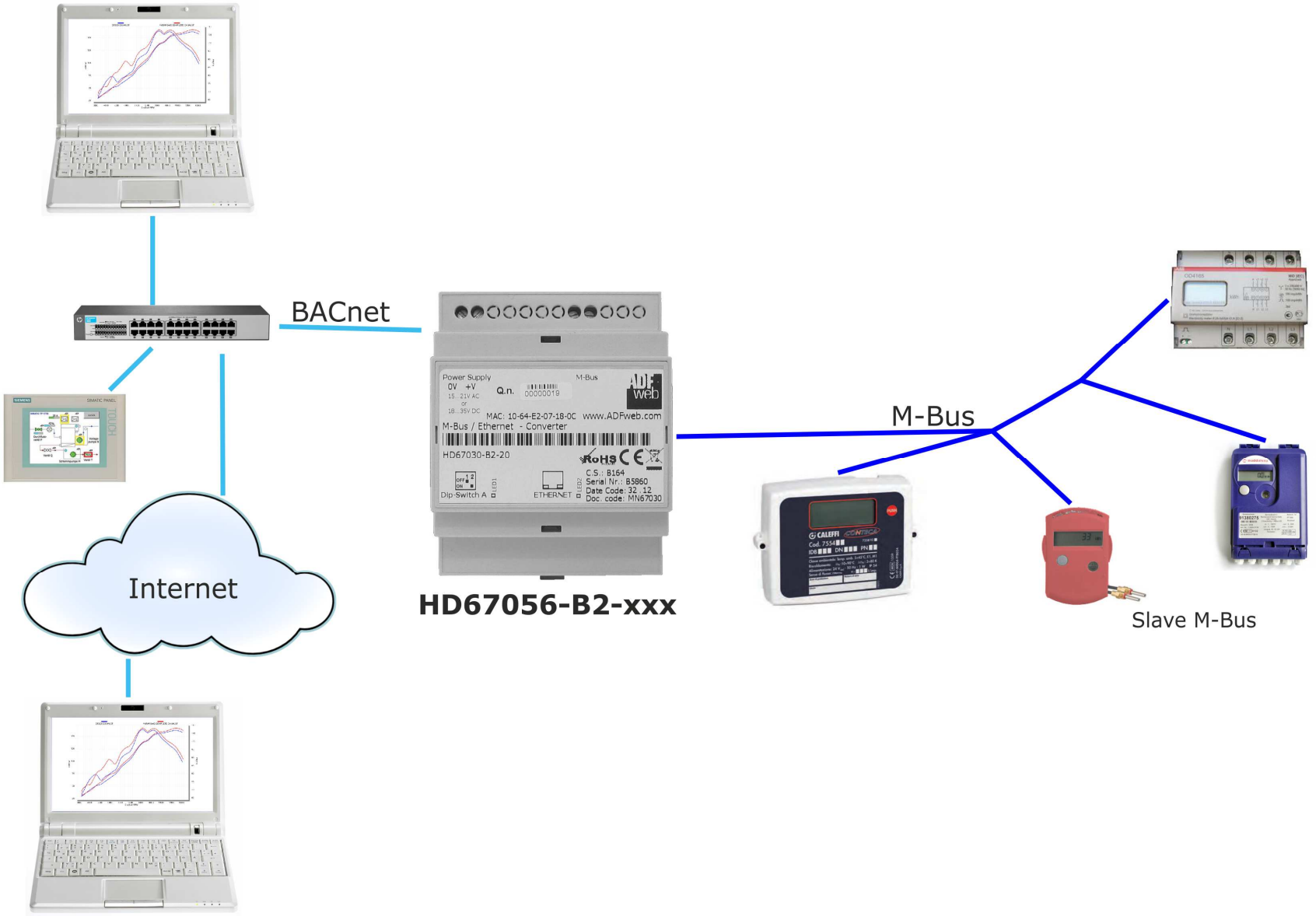
The device is state-of-the-art and is safe. The instruments can represent a potential hazard if they are inappropriately installed and operated by untrained personnel. These instructions refer to residual risks with the following symbol:

This symbol indicates that non-observance of the safety instructions is a danger for people that could lead to serious injury or death and / or the possibility of damage.

### CE CONFORMITY

The declaration is made by our company. You can send an email to support@adfweb.com or give us a call if you need it.

**EXAMPLE OF CONNECTION:**



**CONNECTION SCHEME:**

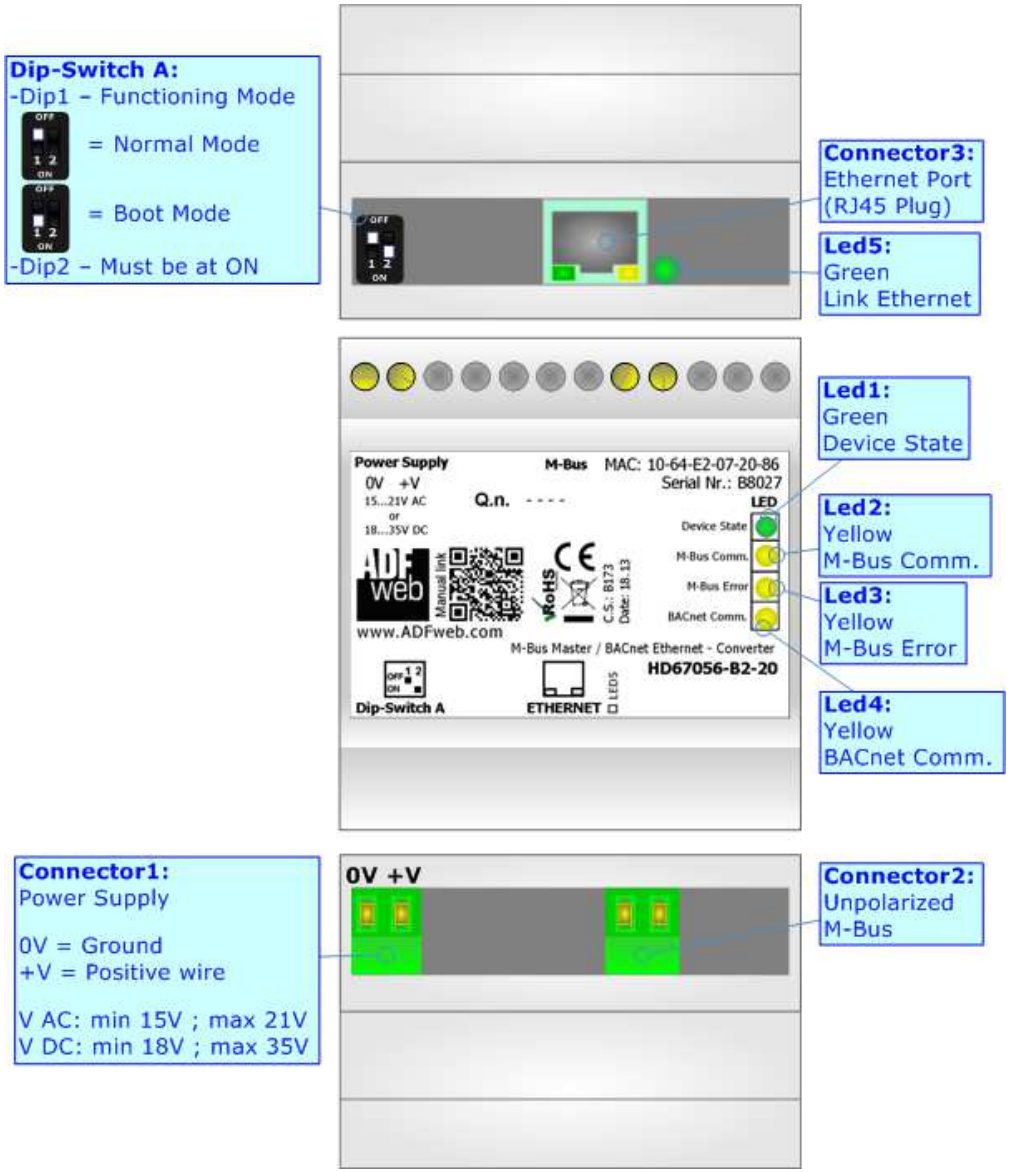



*Figure 1a: Connection scheme for HD67056-B2-xxx*

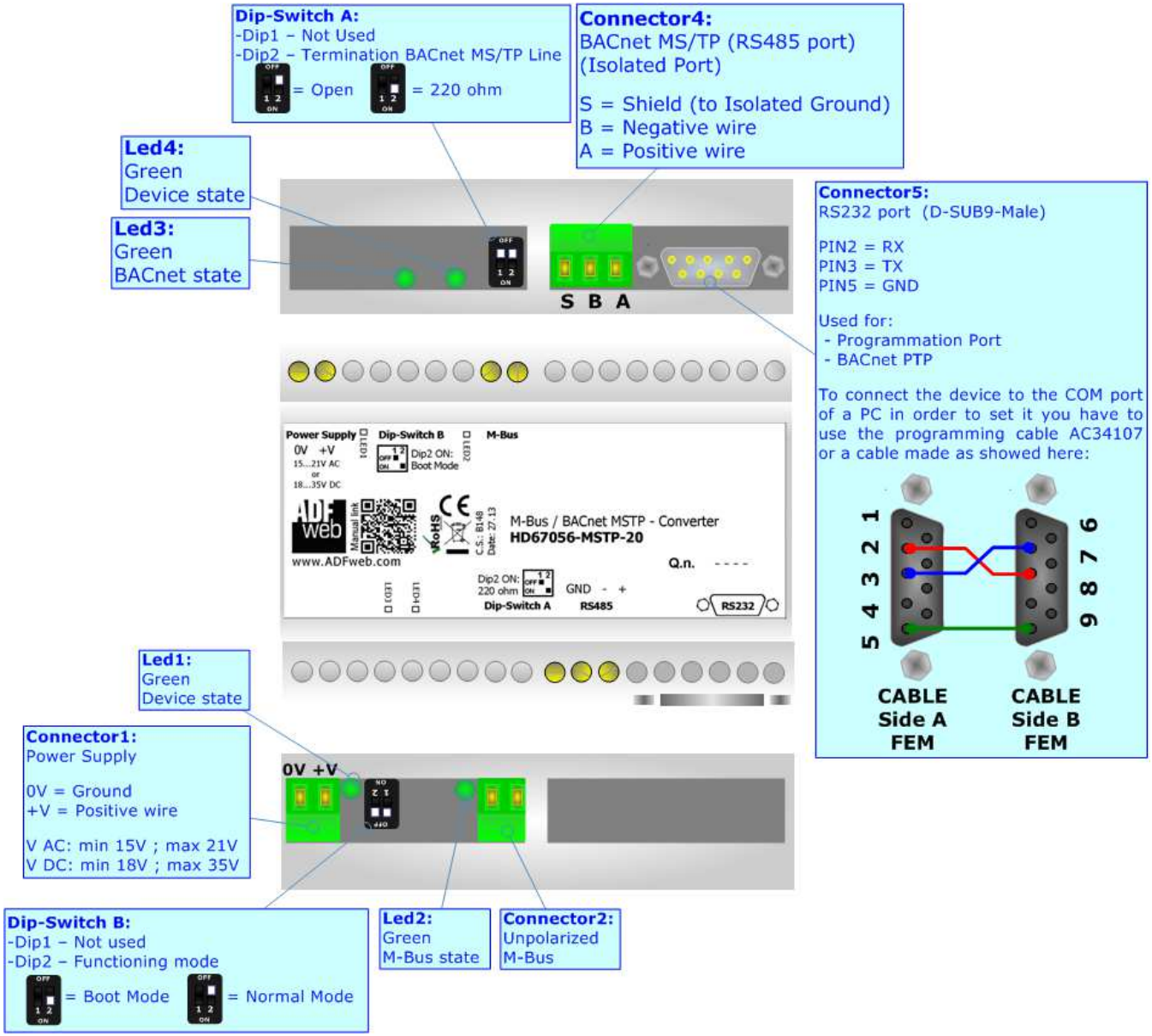



*Figure 1b: Connection scheme for HD67056-MSTP-xxx*

**CHARACTERISTICS:**

The HD67056-B2-xxx is a M-Bus Master / BACnet/IP Converter.
The HD67056-MSTP-xxx is a M-Bus Master / BACnet MSTP/PTP Converter.

It allows the following characteristics:

- Electrical isolation between Ethernet and M-Bus (for HD67056-B2-xxx serie);
- Electrical isolation between RS485/RS232 and M-Bus (for HD67056-MSTP-xxx serie);
- Baud Rate and Parity changeable with software;
- Mountable on 35mm Rail DIN;
- Power Supply 15…21V AC or 18…35V DC;
- Temperature range -40°C to 85°C.

At the Converter can be connected up to 250 standard M-Bus devices. This number depends of the code expressed by the xxx number:

- HD67056-B2-20 and HD67056-MSTP-20 support up to 20 M-Bus devices;
- HD67056-B2-40 and HD67056-MSTP-40 support up to 40 M-Bus devices;
- HD67056-B2-80 and HD67056-MSTP-80 support up to 80 M-Bus devices;
- HD67056-B2-160 and HD67056-MSTP-160 support up to 160 M-Bus devices;
- HD67056-B2-250 and HD67056-MSTP-250 support up to 250 M-Bus devices.

**CONFIGURATION:**

You need Compositor SW67056 software on your PC in order to perform the following:

- Define the parameter of BACnet line;
- Define the parameter of M-Bus line;
- Define which M-Bus variables are readable on BACnet ;
- Update the device.

**POWER SUPPLY:**

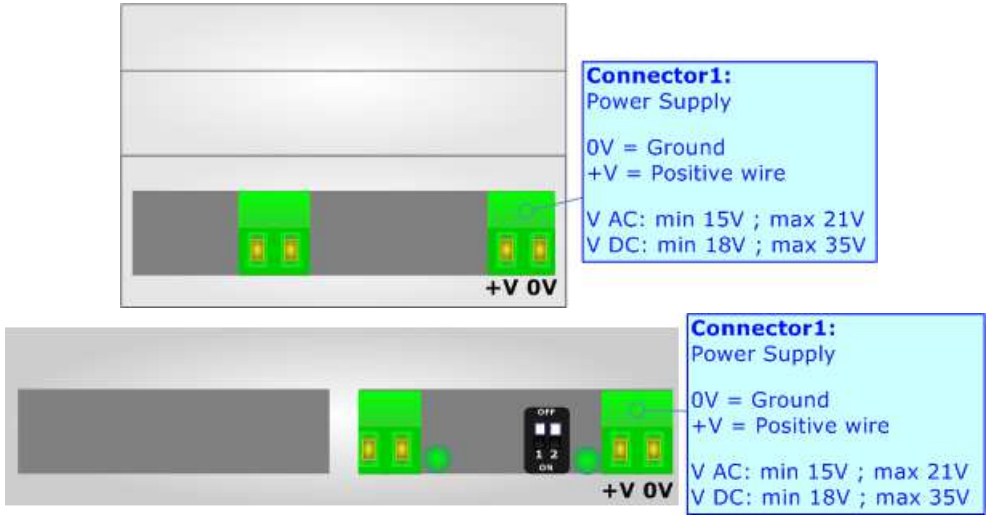
The devices can be powered at 15…21V AC and 18…35V DC. The consumption depends to the code of the device. For more details see the two tables below.

| VAC ~ | | VDC ⎓ | |
|---|---|---|---|
| **Vmin** | **Vmax** | **Vmin** | **Vmax** |
| **15V** | **21V** | **18V** | **35V** |

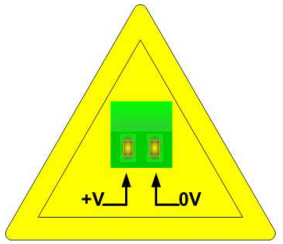
Consumption at 24V DC:

| Device | No Load [W/VA] | Full Load [W/VA]* |
|---|---|---|
| HD67056-B2-20, HD67056-MSTP-20 | 3.5 | 4 |
| HD67056-B2-40, HD67056-MSTP-40 | | 5 |
| HD67056-B2-80, HD67056-MSTP-80 | | 8 |
| HD67056-B2-160, HD67056-MSTP-160 | | 14 |
| HD67056-B2-250, HD67056-MSTP-250 | | 30 |

* This value is with all the Slave M-Bus devices of the code (20, 40, 80, 160, 250) connected to the line




**Caution: Not reverse the polarity power**



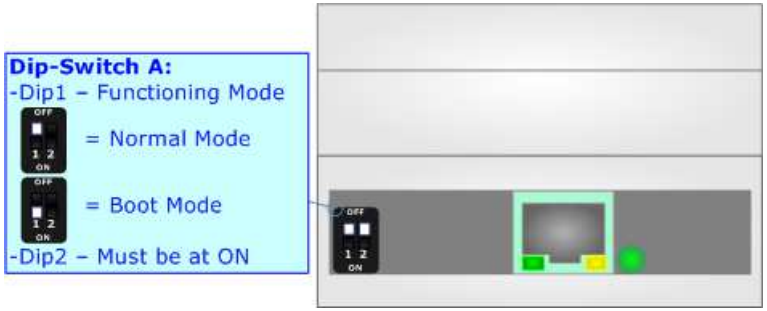

HD67056-B2-xxx
HD67056-MSTP-xxx

**FUNCTION MODES:**

HD67056-B2-xxx serie

The device has got two functions mode depending of the position of the 'Dip1 of Dip-Switch A':

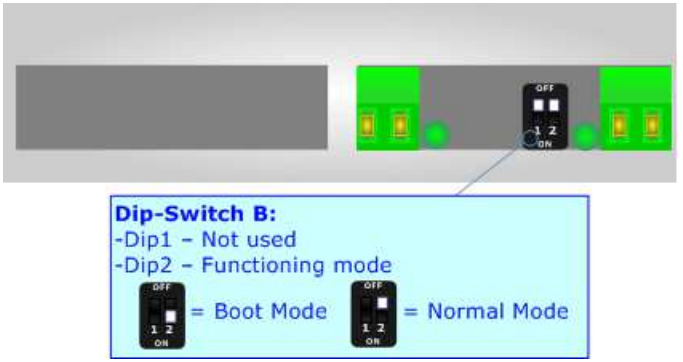
- The first, with 'Dip1 of Dip-Switch A' at "OFF" position, is used for the normal working of the device.
- The second, with 'Dip1 of Dip-Switch A' at "ON" position, is used for upload the Project and/or Firmware.




HD67056-MSTP-xxx serie

The device has got two functions mode depending of the position of the 'Dip2 of Dip-Switch B':

- The first, with 'Dip2 of Dip-Switch B' at "OFF" position, is used for the normal working of the device.
- The second, with 'Dip2 of Dip-Switch B' at "ON" position, is used for upload the Project and/or Firmware.




For the operations to follow for the updating, see 'UPDATE DEVICE' section.

According to the functioning mode, the LEDs will have specifics functions, see 'LEDS' section.

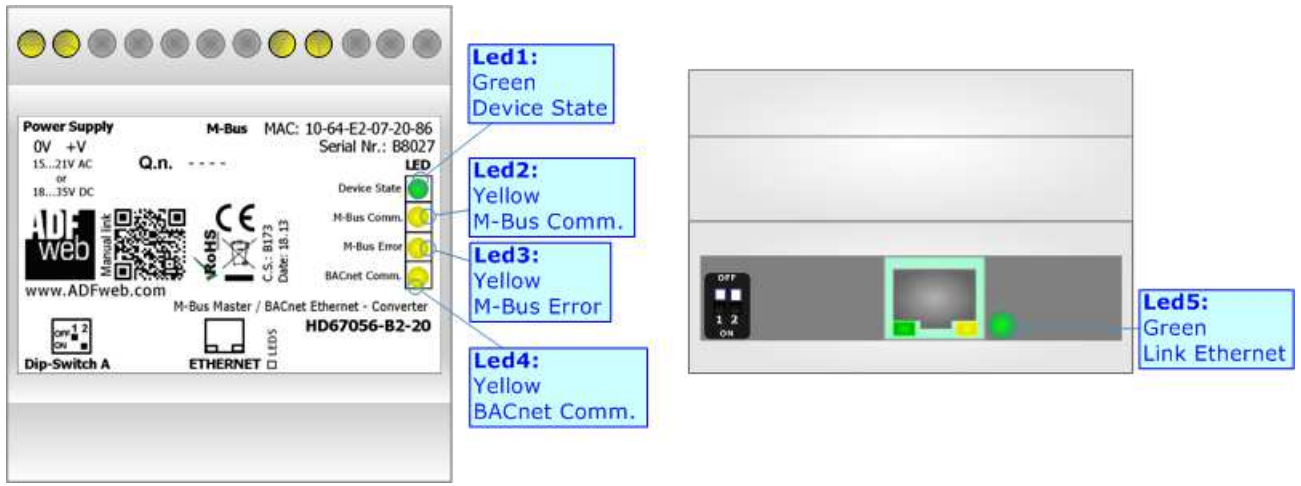
Warning:
Dip2 of 'Dip-Switch A' of HD67056-B2-xxx must be at ON position for working even if the Ethernet cable isn't inserted.

**LEDS:**

HD67056-B2-xxx

The device has got five LEDs that are used to give information of the functioning status.
The various meanings of the LEDs are described in the table below.

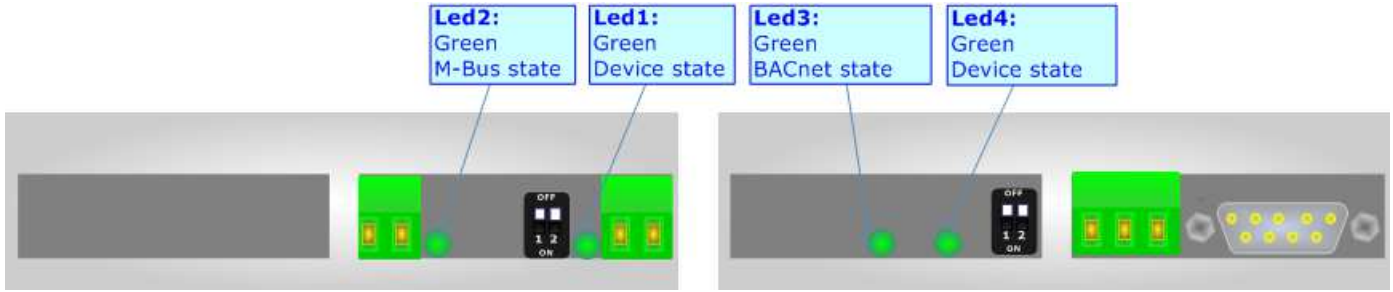
| LED | Normal Mode | Boot Mode |
|---|---|---|
| 1: Device State (green) | Blinks slowly (~1Hz) | Blinks quickly |
| 2: M-Bus Comm. (green) | Blinks quickly when a reply to a MBus request arrives | Blinks quickly |
| 3: M-Bus Error | Becames ON when the reply to MBus interrogation isn't arrived | Blinks quickly |
| 4: BACnet Comm. | Change state when receive a BACnet request | Blinks quickly |
| 5: Ethernet Link (green) | **ON:** Ethernet cable connected<br>**OFF:** Ethernet cable disconnected | **ON:** Ethernet cable connected<br>**OFF:** Ethernet cable disconnected |



HD67056-MSTP-xxx

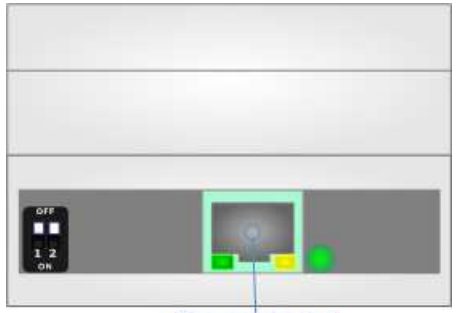
The device has got four LEDs that are used to give information of the functioning status.
The various meanings of the LEDs are described in the table below.

| **LED** | **Normal Mode** | **Boot Mode** |
|---|---|---|
| 1: Device state (green) | Blinks slowly (~1Hz) | OFF |
| 2: M-Bus state (green) | Blinks quickly when a reply to a MBus request arrives | OFF |
| 3: BACnet Comm. | Change state when receive a BACnet request | OFF |
| 4: Device state (green) | OFF | Blinks slowly |



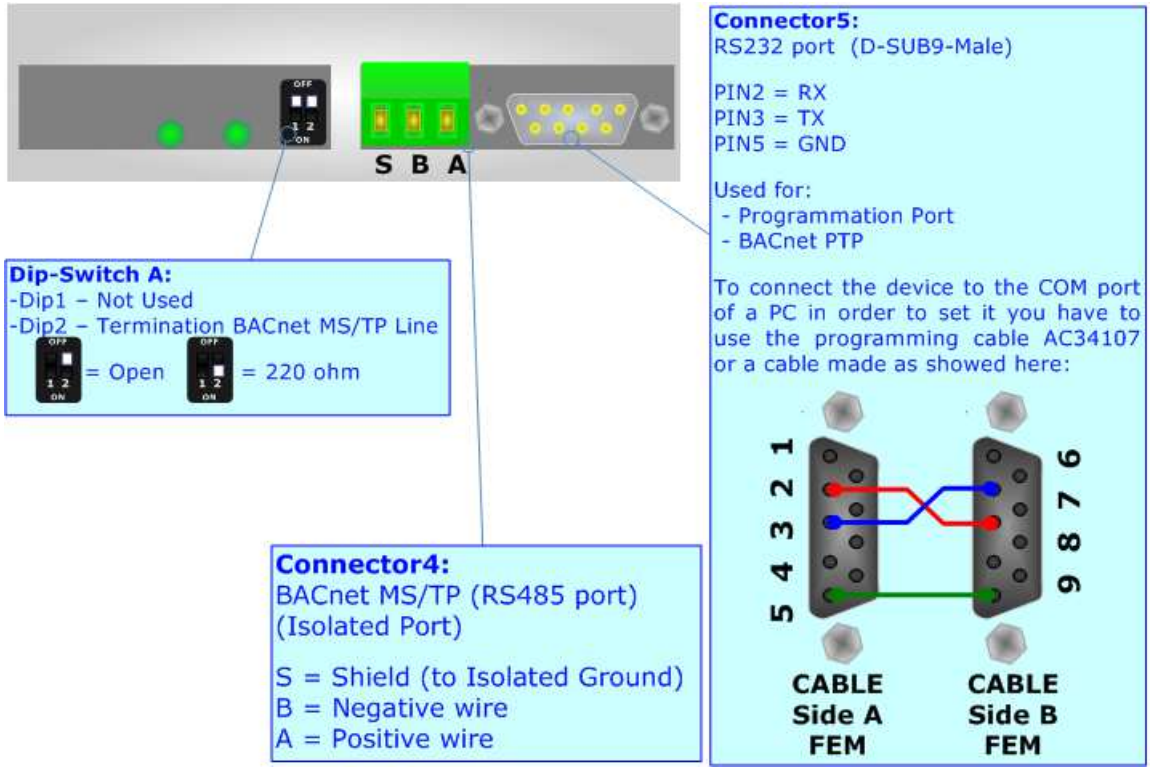
**BACNET (HD67056-B2-XXX SERIE):**

The BACnet connection must be made using Connector3 of HD67056-B2 with at least a Category 5E cable. The maximum length of the cable should not exceed 100m. The cable has to conform to the T568 norms relative to connections in cat.5 up to 100 Mbps. To connect the device to an Hub/Switch is recommended the use of a straight cable, to connect the device to a PC/PLC/other is recommended the use of a cross cable.



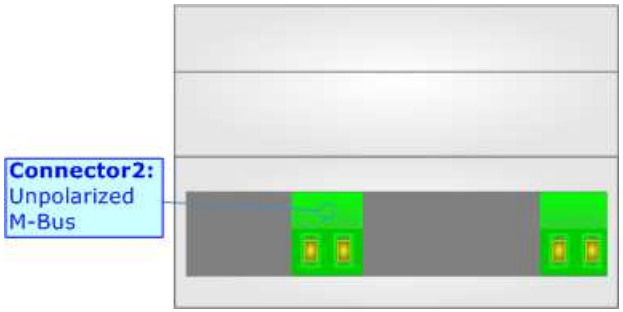

**BACNET (HD67056-MSTP-XXX SERIE):**

The BACnet connection must be made using Connector4 or Connector5 of HD67056-MSTP.



**M-BUS:**

The M-Bus is a unpolarized bus.
A two wire standard telephone cable (JYStY N*2*0.8 mm) is used as the transmission medium for the M-Bus. The maximum distance between a slave and the repeater is 350m; this length corresponds to a cable resistance of up 29Ω. This distance applies for the standard configuration having Baud rates between 300 and 9600 Baud, and a maximum of 250 slaves. The maximum distance can be increased by limiting the Baud rate and using fewer slaves, but the bus voltage in the space state must at no point in a segment fall below 12V, because of the remote powering of the slaves. In the standard configuration the total cable length should not exceed 1000m, in order to meet the requirement of a maximum cable capacitance of 180nF. *(Taken from M-Bus specifics)*



## USE OF COMPOSITOR SW67056:

To configure the Converter, use the available software that runs with Windows, called SW67056. It is downloadable on the site www.adfweb.com and its operation is described in this document. *(This manual is referenced to the last version of the software present on our web site)*. The software works with MSWindows (XP, Vista, Seven, 8; 32/64bit).

When launching the SW67056 the right window appears (Fig. 2).

Note:
It is necessary to have installed .Net Framework 4.

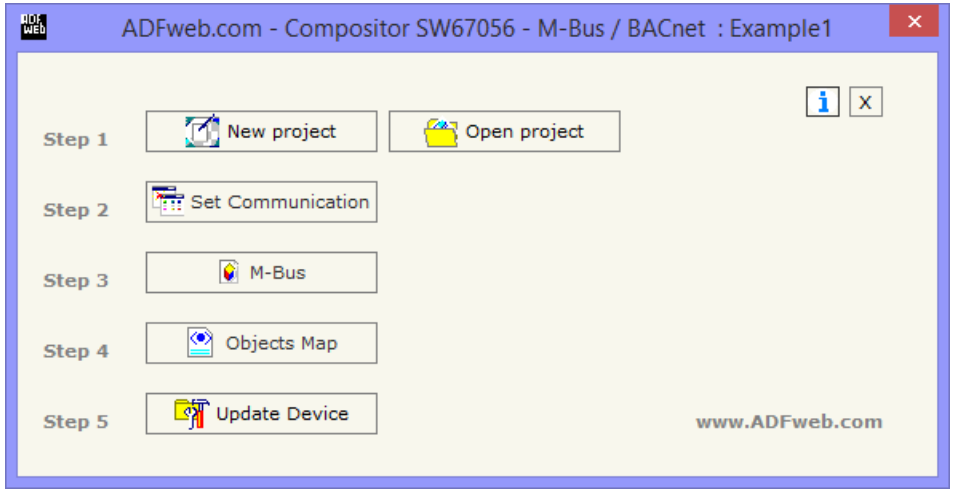
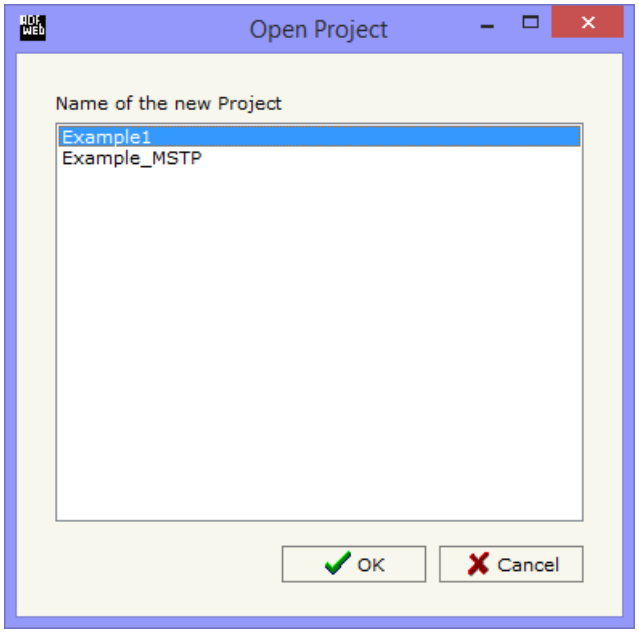
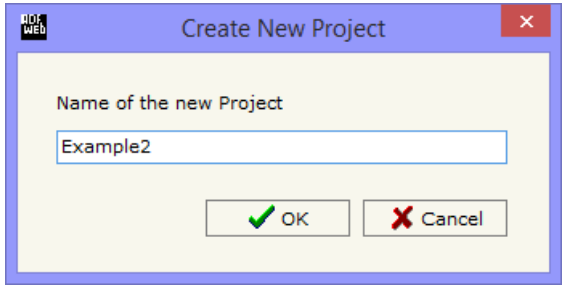



*Figure 2: Main window for SW67056*

## NEW PROJECT / OPEN PROJECT:




The "**New Project**" button creates the folder which contains the entire device configuration.




A device configuration can also be imported or exported:

- To clone the configurations of a Programmable "M-Bus Master / BACnet - Converter" in order to configure another device in the same manner, it is necessary to maintain the folder and all its contents;
- To clone a project in order to obtain a different version of the project, it is sufficient to duplicate the project folder with another name and open the new folder with the button "**Open Project**".

**SET COMMUNICATION:**

This section define the fundamental communication parameters of two buses, BACnet and M-Bus.

By Pressing the "**Set Communication**" button from the main window for SW67056 (Fig. 2) the window "Set Communication" appears (Fig. 3).
The window is divided in three sections, the first for select the type of BACnet, one for the BACnet parameters and the other for the M-Bus.

In the field "**Type**" is possible to select the type of BACnet to use from:

- BACnet/IP (use ethernet);
- BACnet MS/TP (use RS485);
- BACnet PTP (use RS232);

The means of the fields for M-Bus are:

- In the field "**Baudrate**" it is possible to select the baudrate of the M-Bus line (300, 600, 1200, 2400, 4800, 9600, 19200, 38400);
- In the field "**Parity**" it is possible to select the parity of the line (None, Odd, Even);
- If the field "**Cyclic Delay**" insert the time (expressed in seconds) between two scans (from 0 to 65535);
- In the field "**Node State value when slave device is not present**" it is possible to insert the value to assign to the "Node State" when the Gateway doesn't find the interrogated slave M-Bus (from 0 to 255).

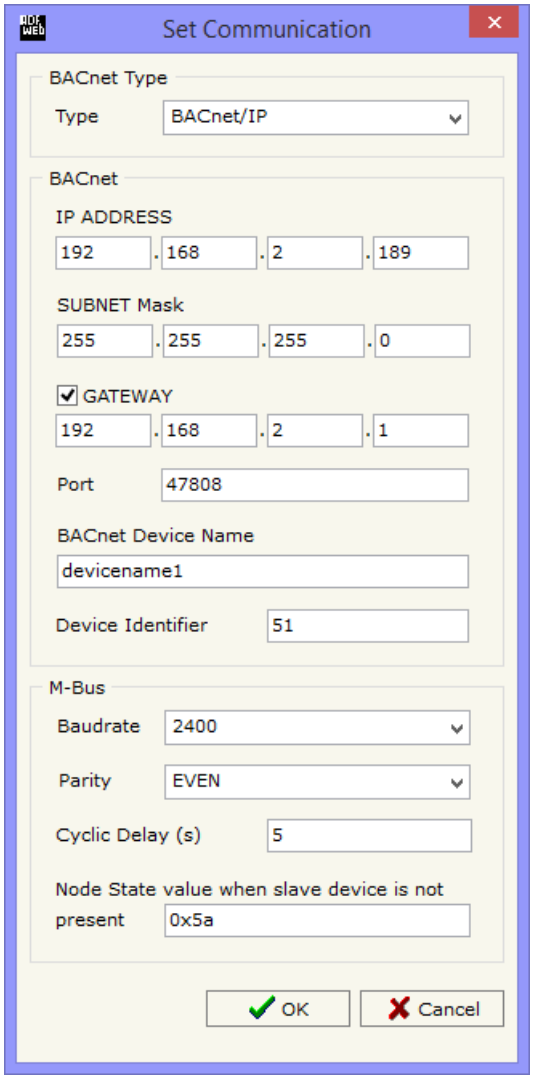



*Figure 3a: "Set Communication" window*

If selected "BACnet/IP" the means of the fields for "BACnet" are:

- In the fields "**IP ADDRESS**" insert the IP address that you want to give to the Converter;
- In the fields "**SubNet Mask**" insert the SubNet Mask;
- In the fields "**GATEWAY**" insert the default gateway that you want to use. This feature can be enabled of disabled pressing the Check Box field;
- In the field "**Port**" the port number used for BACnet communication is defined. The default port used for BACnet communication is 47808, but is possible to insert any value (except 10000 and 10001);
- In the field "**BACnet Device Name**" is possible to insert the name to give to the BACnet node;
- In the field "**Device Identifier**" is possible to insert a number used for the "Device Identifier " of the BACnet node.

If selected "BACnet MS/TP" or "BACnet PTP" the means of the fields for "BACnet" are:

- In the field "**Baudrate**" it is possible to select the baudrate of the BACnet line (1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200);
- In the field "**Parity**" it is possible to select the parity of the line (None, Odd, Even);
- In the field "**MAC Address**" is possible to define the MAC of BACnet node (from 0 to 254);
- In the field "**BACnet Device Name**" is possible to insert the name to give to the BACnet node (maximum 17 characters).

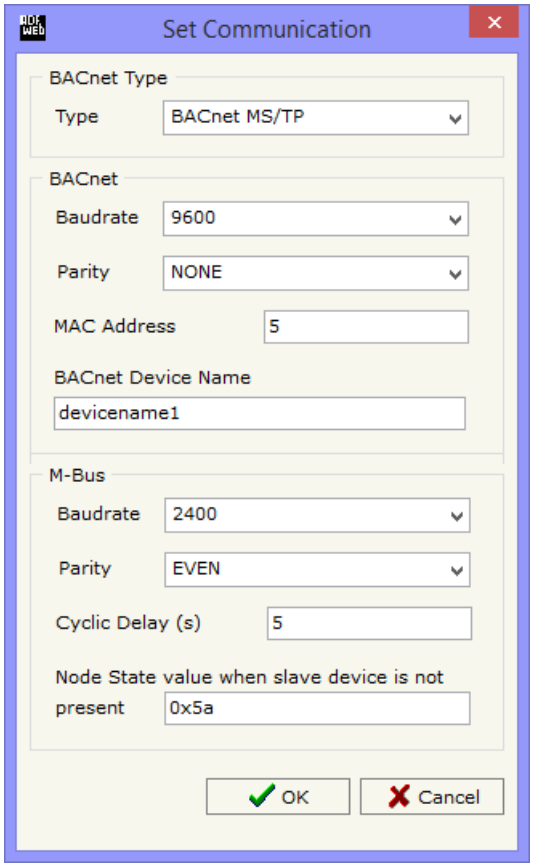



*Figure 3b: "Set Communication" window*

**M-BUS:**

By Pressing the "**M-Bus**" button from the main window for SW67056 (Fig. 2) the window "M-Bus Network" appears (Fig. 4).

**SECTION NODES:**

In the section "Nodes" it is possible to create the nodes of M-Bus line.

- In order to create a new node it is necessary to select which address use, selecting "**Primary ID Node**" or "**Secondary ID Node**", to makes the requests and then insert the "Primary Address" (from 1 to 250) or the "Secondary Address" (from 0 to 99999999) of M-Bus device in the field "**ID Node M-Bus**". In the field "**Description**" it is possible to write a short description of the node;
- If the field "**Node State**" is checked the Converter creates a BACnet object (Positive Integer type) for saving the status of the counter;
- If the field "**Identification Number**" is checked the Converter creates a BACnet object (Positive Integer type) for saving the Secondary Address of the device;
- If the field "**Convert BCD in Integer Identification Num.**" is checked the Converter converts the Identification Number that is normally expressed in BCD in a Integer Number and saves the number in the reserved positions;
- If the field "**Send SND_NKE**" is checked, the Converter send the "SND_NKE" frame to start the communication;
- In the field "**Send Reset App.**" Is checked the Converter send the "Application Reset" command to the slave;

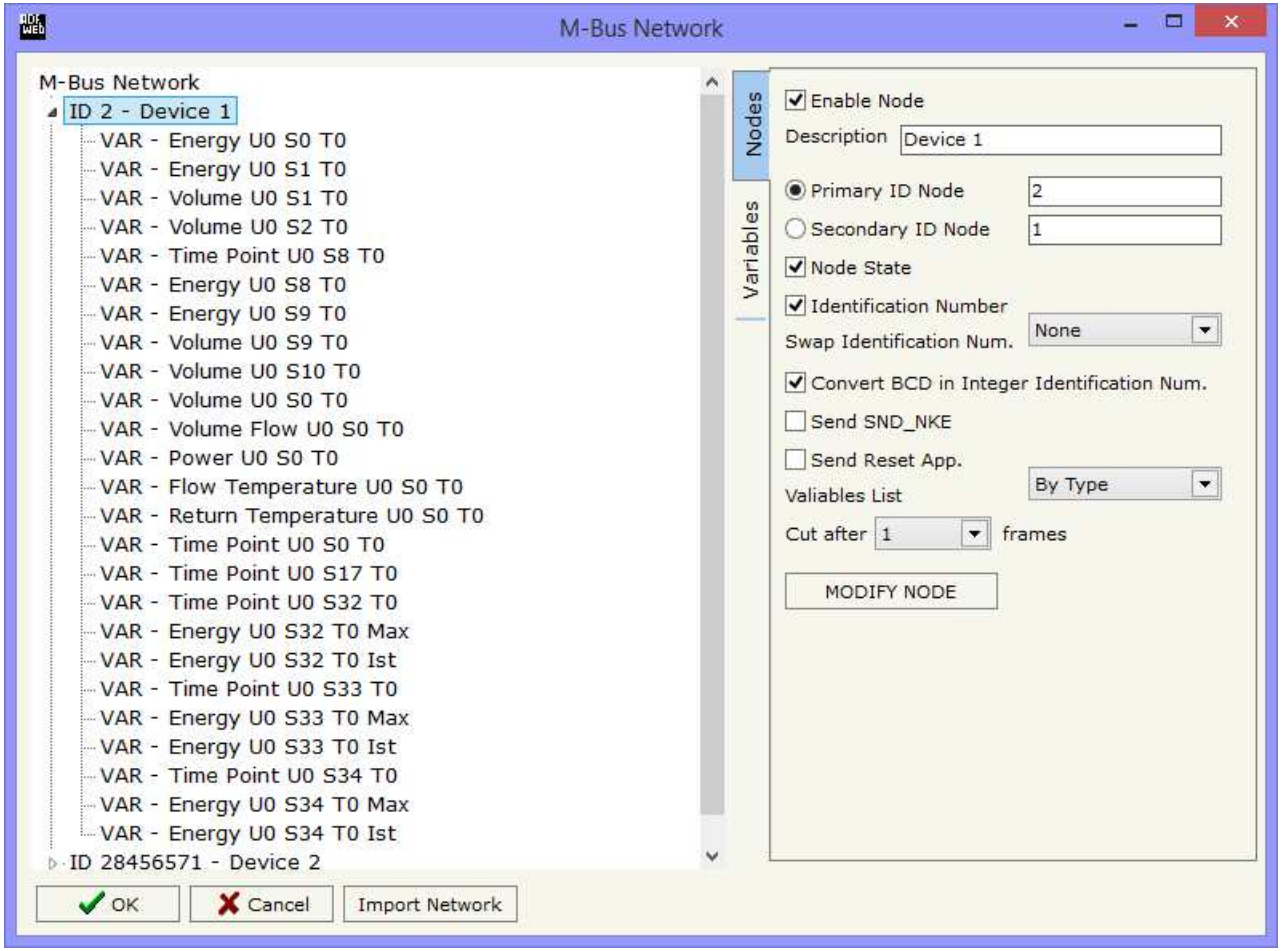



*Figure 4: "M-Bus Network" window*

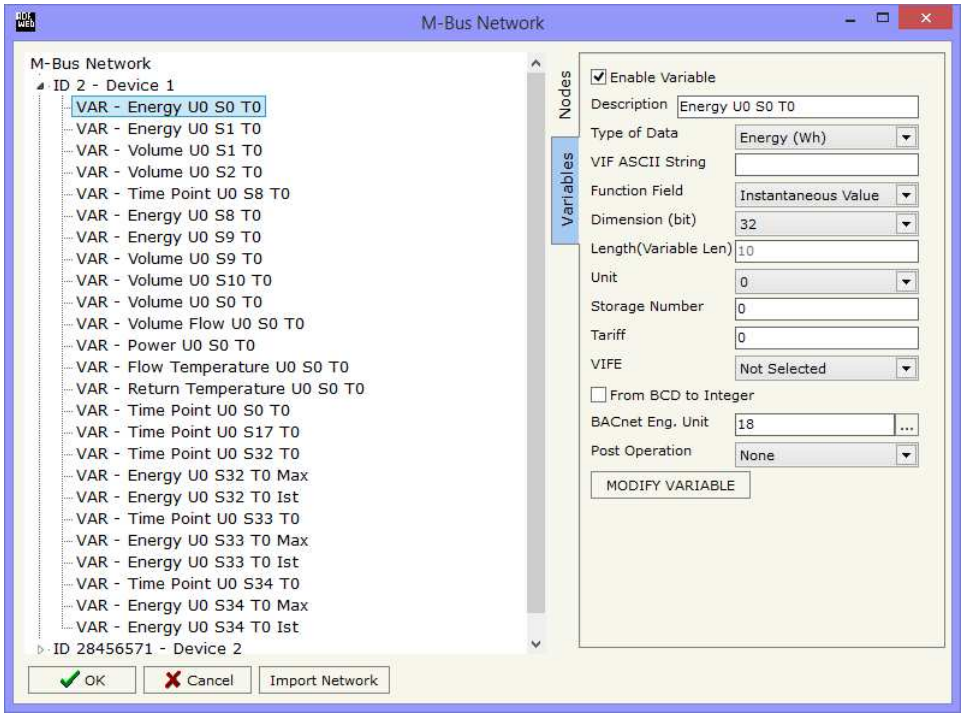
- In the field "**Variables List**" it is possible to select which type of variables definition to use. If is selected "By Type" it is necessary to fill all fields, in the section Variables, with the correct values; otherwise if "By Position" is selected you can insert the progressive number of the variable that you need (page 13 for more information);
- In the field "**Cut after … frames**" it is possible to select after how many frames the Converter stop to require data (to be used in case of Multi-Telegram Slave);
- To use the created node the field "**Enable Node**" must be checked. If you have created a node but for the moment it is unused it is possible to uncheck the field "Enable Node" without delete it.

After that, pressing the "***ADD NODE***" button, a new node appears in the left side of the window.

In order to modify a created node it is necessary to select the desired node, change the wrong items and then press the "***MODIFY NODE***" button.

**SECTION VARIABLES (BY TYPE):**

Selecting the desired node it is possible to add a variable. In order to create a new variable it is necessary to fill these items:



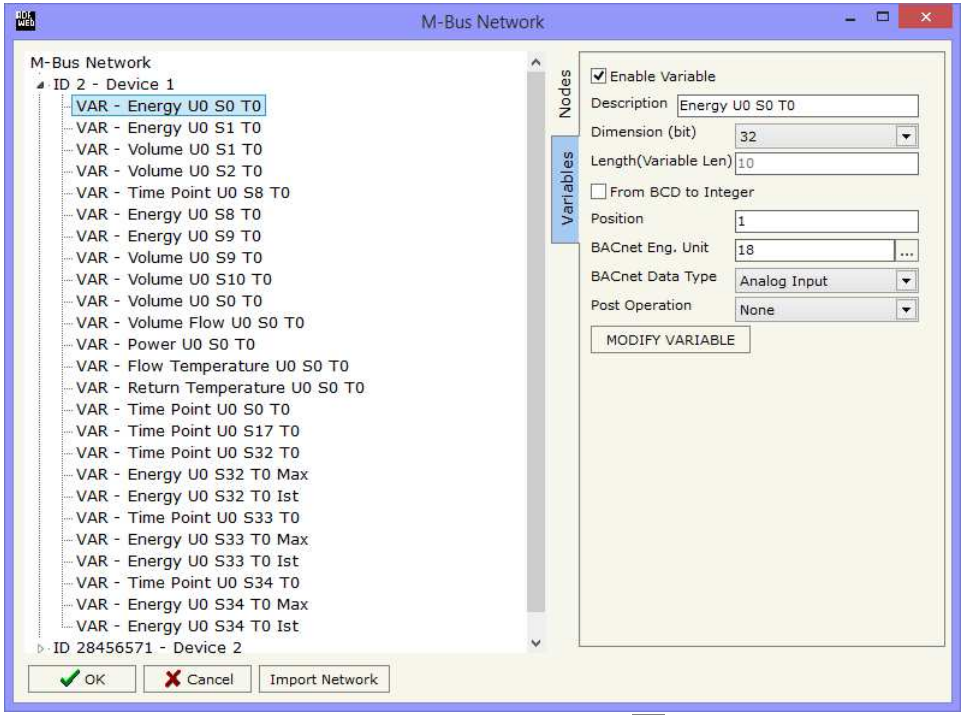

- To use the created variable the field "**Enable Variable**" must be checked. If you have created a variable but for the moment it is unused it is possible to uncheck the field "Enable Variable" without delete it;
- In the field "**Description**" it is possible to write a description of the variable (it isn't a necessary information, it helps the readability of the tree of network);
- The field "**Type of Data**" is used to select the unit of measure;
- In the field "**VIF ASCII String**" insert the string of VIF. It is possible to use this field only if the "Type of Data" is "VIF is in ASCII";
- In the field "**Function Field**" it is necessary to select the type of data;
- The field "**Dimension**" is used to select the dimension of the variable (8, 16, 24, 32, 32 real, 48, 64 bit);
- In the field "***Length(Variable Len)***" insert the length of the data in the case of the dimension is "Variable Length";
- In the field "**Unit**" if it is necessary it is possible to select the unit of that variable. The Unit is used for indicates from which device the data come;
- In the field "**Storage Number**" if it is necessary it is possible to insert the value of storage counter of that variable. With this field the slave can indicate and transmit various stored counter states or historical values, in the order in which they occur;
- In the field "**Tariff**" if it is necessary it is possible to insert the value of the tariff of that variable. The Tariff is used for indicates from which device the data come;
- In the field "**VIFE**" it is possible to select a sub-type of "Type of Data";
- If the field "**From BCD to Integer**" is checked the Converter converts the BCD value of variable in Integer format. This happens only if the variable is in BCD format and if the Data Type of BACnet is "Positive Integer Value"; if it isn't nothing changes;
- In the field "**BACnet Eng. Unit**" it is possible to select a Engineering Unit of the Object by pressing to the ... button (see 'BACNET ENG. UNIT' section for more details);
- In the field "**Post Operation**" it is possible to select to do a math operation to the value. The possibilities are: :10, :100, :1000, :10000, :100000, *10, *100, *1000, *10000, *100000.

Having completed these fields, to add the variable the button "***ADD VARIABLE***" must be pressed.

In order to modify a created variable it is necessary to select the desired variable, change the wrong items and then press the "***MODIFY VARIABLE***" button.

## SECTION VARIABLES (BY POSITION):

Selecting the desired node it is possible to add a variable. In order to create a new variable it is necessary to fill these items:




- To use the created variable the field "**Enable Variable**" must be checked. If you have created a variable but for the moment it is unused it is possible to uncheck the field "Enable Variable" without delete it;
- In the field "**Description**" it is possible to write a description of the variable (it isn't a necessary information, it helps the readability of the tree of network);
- The field "**Dimension**" is used to select the dimension of the variable (8, 16, 24, 32, 32 real, 48, 64 bit);
- In the field "***Length(Variable Len)***" insert the length of the data in the case of the dimension is "Variable Length";
- If the field "**From BCD to Integer**" is checked the Converter converts the BCD value of variable in Integer format. This happens only if the variable is in BCD format and if the Data Type of BACnet is "Positive Integer Value"; if it isn't nothing changes;
- In the field "**Position**" insert the number of the variable that you want on BACnet;
- In the field "**BACnet Eng. Unit**" it is possible to select a Engineering Unit of the Object by pressing to the ... button (see 'BACNET ENG. UNIT' section for more details).
- In the field "**BACnet Data Type**" it is possible to select a type of Object used for saving the variable (see 'BACNET DATA TYPE section for more details);
- In the field "**Post Operation**" it is possible to select to do a math operation to the value. The possibilities are: :10, :100, :1000, :10000, :100000, *10, *100, *1000, *10000, *100000.

Example:

0x68 – Start Byte
0xBD – L Fied
0xBD – L Field
0x68 – Start Byte
0x08 – C Field
0x02 – A Field
0x72 – CI Field

0x71 – Identification Number (Byte 4of4)
0x65 – Identification Number (Byte 3of4)
0x45 – Identification Number (Byte 2of4)
0x28 – Identification Number (Byte 1of4)
0x4D – Manufacturer (Byte 2of2)
0x6A – Manufacturer (Byte 1of2)
0x81 – Version
0x04 – Medium
0x3E – Access Number
0x27 – Status
0x00 – Signature (Byte 2of2)
0x00 – Signature (Byte 1of2)

Fixed Data Header

Identification Number (or Secondary Address) put in the reserved fields if "**Identification Number**" is checked

Status of the meter put in the reserved field if "**Node State**" is checked

0x04 – DIF
0x79 – VIF Identification
0x00 – Data (Byte 4of4)
0x00 – Data (Byte 3of4)
0x00 – Data (Byte 2of4)
0x00 – Data (Byte 1of4)

First Variable (1)

0x04 – DIF
0x06 – VIF Energy
0x00 – Data (Byte 4of4)
0x00 – Data (Byte 3of4)
0x00 – Data (Byte 2of4)
0x00 – Data (Byte 1of4)

Second Variable (2)

0x44 – DIF
0x06 – VIF Energy
0x00 – Data (Byte 4Of4)
0x00 – Data (Byte 3Of4)
0x00 – Data (Byte 2Of4)
0x00 – Data (Byte 1Of4)

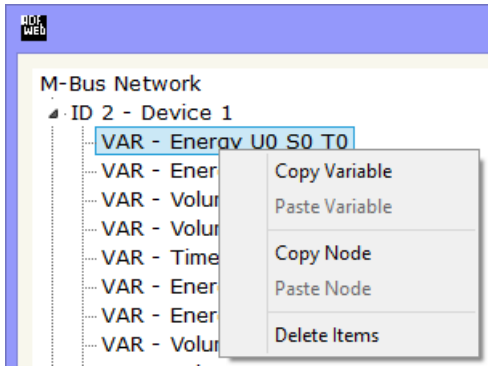
Third Variable (3)

…
… Other Variables
…
0x55 – Check Sum
0x16 – Stop Byte

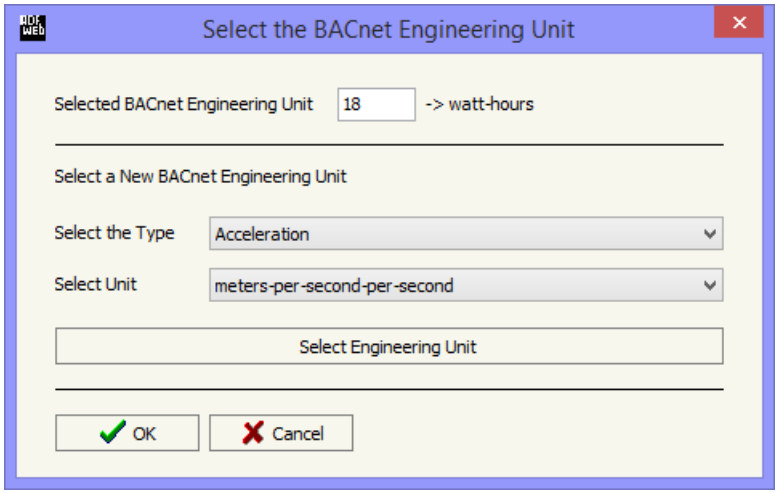
To be use in the "**Position**" field

**COPY / PASTE / DELETE:**

Is possible to copy/paste/delete a node or a variable, simply by going with the right button of mouse on the desired item.




**BACNET ENG. UNIT:**




By pressing to [...] button the left window appears (Fig. 5).

Is possible to insert directly the Unit (using its unique number) by compiling the "**Selected BACnet Engineering Unit**" field; or by selecting with the fields "**Select the Type**" and "**Select unit**" the Type/Unit desired. If the second way is used, is necessary to press the "**Select Engineering Unit**" button for confirm the choice.

*Figure 5: "Select the BACnet Engineering Unit" window*

**BACNET DATA TYPE:**

When using the "Variables List → By Position" is necessary to select the Data Type of the variable. Is possible to select from these types: Analog Input (1), DateTime (3), Positive Integer (2), String (4). See the number between *[]* in the VIFE section for know the type to assign to a variable.

Possible choices for the fields used to create a variable:

**Type of Data:**
|_Energy (Wh) *[BACnet Data Type: 1]*
|_Energy (J) *[1]*
|_Volume ($m^3$) *[1]*
|_Mass (Kg) *[1]*
|_On Time *[1]*
|_Operating Time *[1]*
|_Power (W) *[1]*
|_Power (J/h) *[1]*
|_Volume Flow ($m^3$/h) *[1]*
|_Volume Flow Ext. ($m^3$/min) *[1]*
|_Volume Flow Ext. ($m^3$/s) *[1]*
|_Mass Flow (Kg/h) *[1]*
|_Flow Temperature (°C) *[1]*
|_Return Temperature (°C) *[1]*
|_Temperature Difference (K) *[1]*
|_External Temperature (°C) *[1]*
|_Pressure (bar) *[1]*
|_Averaging Duration *[1]*
|_Actuality Duration *[1]*
|_Type of data in VIFE
|_Time Point *[3]*
|_VIF is in ASCII *[2]*
|_Unit for H.C.A. *[2]*
|_Fabrication No *[2]*
|_(Enhaced) Identification *[2]*
|_Bus Address *[2]*

**Function Field:**
|_Instantaneous Value
|_Minimum Value
|_Maximum Value
|_Value During Error State

**Dimension (bit):**
|_8
|_16
|_24
|_32
|_32 real
|_48
|_64
|_Variable Length *[4]*

**VIFE:**

|_ Not Selected
|_ Credit of the nominal local legal currency units *[2]*
|_ Debit of the nominal local legal currency units *[2]*
|_ Access Number (transmission count) *[2]*
|_ Medium (as in fixed header) *[2]*
|_ Manufacturer (as in fixed header) *[2]*
|_ Parameter set identification *[2]*
|_ Model/Version *[2]*
|_ Hardware Version # *[2]*
|_ Firmware Version # *[2]*
|_ Software Version # *[2]*
|_ Customer Location *[2]*
|_ Customer *[2]*
|_ Access Code User *[2]*
|_ Access Code Operator *[2]*
|_ Access Code System Operator *[2]*
|_ Access Code Developer *[2]*
|_ Password *[2]*
|_ Error flags (binary) *[2]*
|_ Error mask *[2]*
|_ Digital Output (binary) *[2]*
|_ Digital Input (binary) *[2]*
|_ Baudrate [Baud] *[2]*
|_ response delay time [bittimes] *[2]*
|_ Retry *[2]*
|_ First storage # for cyclic storage *[2]*
|_ Last storage # for cyclic storage *[2]*
|_ Size of storage block *[2]*
|_ Storage interval [sec(s)..day(s)] *[2]*
|_ Storage interval month(s) *[2]*
|_ Storage interval year(s) *[2]*
|_ Duration since last readout[sec(s)..day(s)] *[2]*
|_ Start (date/time) of tariff *[2]*
|_ Duration of tariff (nn=01..11:min to day) *[2]*
|_ Period of tariff [sec(s) to day(s)] *[2]*
|_ Period of tariff months(s) *[2]*
|_ Period of tariff year(s) *[2]*
|_ dimensionless/ no VIF *[2]*
|_ Volts *[1]*
|_ Ampere *[1]*
|_ Reset counter *[2]*
|_ Comulation counter *[2]*
|_ Control signal *[2]*
|_ Day of week *[2]*
|_ Week number *[2]*
|_ Time point of day change *[2]*
|_ State of parameter activation *[2]*
|_ Special supplier information *[2]*
|_ Duration since last comulation [hour(s)..year(s)] *[2]*
|_ Operation time battery [hour(s)..year(s)] *[2]*
|_ Date and time of battery change *[3]*
|_ Energy MWh *[1]*
|_ Energy GJ *[1]*
|_ Volume *[1]*
|_ Mass *[1]*
|_ Volume 0,1 feet^3 *[1]*
|_ Volume 0,1 american gallon *[1]*
|_ Volume 1 american gallon *[1]*
|_ Volume flow 0,001 american gallon/min *[1]*
|_ Volume flow 1 american gallon/min *[1]*
|_ Volume flow 1 american gallon/h *[1]*
|_ Power MW *[1]*
|_ Power GJ/h *[1]*
|_ Flow Temperature *[1]*
|_ Return Temperature *[1]*
|_ Temperature Difference *[1]*
|_ External Temperature *[1]*
|_ Cold/Warm Temperature Limit °F *[1]*
|_ Cold/Worm Temperature Limit °C *[1]*
|_ Cumul. Count max power *[1]*

|_ per second *[2]*
|_ per minute *[2]*
|_ per hour *[2]*
|_ per day *[2]*
|_ per week *[2]*
|_ per month *[2]*
|_ per year *[2]*
|_ per revolution/measurement *[2]*
|_ increment per input pulse on input channel *[2]*
|_ increment per output pulse on output channel *[2]*
|_ per liter *[2]*
|_ per m^3 *[2]*
|_ per kg *[2]*
|_ per K (Kelvin) *[2]*
|_ per kWh *[2]*
|_ per GJ *[2]*
|_ per kW *[2]*
|_ per (K*l)(Kelvin*liter) *[2]*
|_ per V (Volt) *[2]*
|_ per A (Ampere) *[2]*
|_ multiplied by sek *[2]*
|_ multiplied by sek/V *[2]*
|_ multiplied by sek/A *[2]*
|_ start date(/time) of *[2]*
|_ VIF contains uncorrected unit instead of corrected unit *[2]*
|_ Accumulation only if positive contributions *[2]*
|_ Accumulation of abs value only if negative contributions *[2]*
|_ upper/lower limit value *[2]*
|_ # of exceeds of lower/upper limit *[2]*
|_ Date(/time) of begin/end of first/last lower/upper limit exceed*[2]*
|_ Duration of limit exceed *[2]*
|_ Duration of first/last *[2]*
|_ Date(/time) of first/last begin/end *[2]*
|_ Multiplicative correction factor *[2]*
|_ Additive correction constant * unit of VIF (offset) *[2]*
|_ Moltiplicative correction factor: 10^3 *[2]*
|_ future value *[2]*
|_ next VIFE's and data of this block are manufacturer specific *[2]*
|_ None *[2]*
|_ Too many DIFE's *[2]*
|_ Storage number not implemented *[2]*
|_ Unit number not implemented *[2]*
|_ Tariff number not implemented *[2]*
|_ Function not implemented *[2]*
|_ Data class not implemented *[2]*
|_ Data size not implemented *[2]*
|_ Too many VIFE's *[2]*
|_ Illegal VIF-Group *[2]*
|_ Illegal VIF-Exponent *[2]*
|_ VIF/DIF mismatch *[2]*
|_ Unimplemented action *[2]*
|_ No data available (undefined value) *[2]*
|_ Data overflow *[2]*
|_ Data underflow *[2]*
|_ Data error *[2]*
|_ Premature end of record *[2]*

**OBJECTS MAP:**

By Pressing the "**Objects Map**" button from the main window for SW67056 (Fig. 2) is possible to create a .csv document with the map of BACnet Objects.

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | M-Bus ID Node | Var Description | Istance | BACnet Data Type | BACnet Eng. Unit |
| 8 | Primary ID Node - 2 | Time Point U0 S8 | 0 | DateTime Value Object | no-units |
| 9 | Primary ID Node - 2 | Energy U0 S8 T0 | 4 | Analog Input Object | watt-hours |
| 10 | Primary ID Node - 2 | Energy U0 S9 T0 | 5 | Analog Input Object | watt-hours |
| 11 | Primary ID Node - 2 | Volume U0 S9 T0 | 6 | Analog Input Object | cubic-meters |
| 12 | Primary ID Node - 2 | Volume U0 S10 T0 | 7 | Analog Input Object | cubic-meters |
| 13 | Primary ID Node - 2 | Volume U0 S0 T0 | 8 | Analog Input Object | cubic-meters |
| 14 | Primary ID Node - 2 | Volume Flow U0 S | 9 | Analog Input Object | cubic-meters-per-hour |
| 15 | Primary ID Node - 2 | Power U0 S0 T0 | 10 | Analog Input Object | watts |
| 16 | Primary ID Node - 2 | Flow Temperature | 11 | Analog Input Object | degrees-Celsius |
| 17 | Primary ID Node - 2 | Return Temperatu | 12 | Analog Input Object | degrees-Celsius |
| 18 | Primary ID Node - 2 | Time Point U0 S0 | 1 | DateTime Value Object | no-units |
| 19 | Primary ID Node - 2 | Time Point U0 S1 | 2 | DateTime Value Object | no-units |
| 20 | Primary ID Node - 2 | Time Point U0 S3 | 3 | DateTime Value Object | no-units |
| 21 | Primary ID Node - 2 | Energy U0 S32 T0 | 13 | Analog Input Object | watt-hours |
| 22 | Primary ID Node - 2 | Energy U0 S32 T0 | 14 | Analog Input Object | watt-hours |
| 23 | Primary ID Node - 2 | Time Point U0 S3 | 4 | DateTime Value Object | no-units |
| 24 | Primary ID Node - 2 | Energy U0 S33 T0 | 15 | Analog Input Object | watt-hours |
| 25 | Primary ID Node - 2 | Energy U0 S33 T0 | 16 | Analog Input Object | watt-hours |
| 26 | Primary ID Node - 2 | Time Point U0 S3 | 5 | DateTime Value Object | no-units |
| 27 | Primary ID Node - 2 | Energy U0 S34 T0 | 17 | Analog Input Object | watt-hours |
| 28 | Primary ID Node - 2 | Energy U0 S34 T0 | 18 | Analog Input Object | watt-hours |
| 29 | Secondary ID Node - 28456571 | NS_Device 2 | 2 | Positive Integer Value Object | no-units |
| 30 | Secondary ID Node - 28456571 | IN_Device 2 | 3 | Positive Integer Value Object | no-units |
| 31 | Secondary ID Node - 28456571 | Energy U0 S0 T0 | 19 | Analog Input Object | watt-hours |
| 32 | Secondary ID Node - 28456571 | Energy U0 S1 T0 | 20 | Analog Input Object | watt-hours |

*Figure 6: "Objects Map" example file*

**UPDATE DEVICE (HD67056-B2-xxx serie):**

By pressing the "**Update Device**" button, it is possible to load the created Configuration into the device; and also the Firmware, if necessary.

If you don't know the actual IP address of the device you have to use this procedure:

- Turn off the Device;
- Put Dip1 of 'Dip-Switch A' in ON position;
- Turn on the device
- Connect the Ethernet cable;
- Insert the IP "**192.168.2.205**";
- Press the "**Ping**" button, "Device Found!" must appear;
- Press the "**Next**" button;
- Select which operations you want to do;
- Press the "**Execute update firmware**" button to start the upload;
- When all the operations are "OK" turn off the Device;
- Put Dip1 of 'Dip-Switch A' at OFF position;
- Turn on the device.

At this point the configuration/firmware on the device is correctly updated.

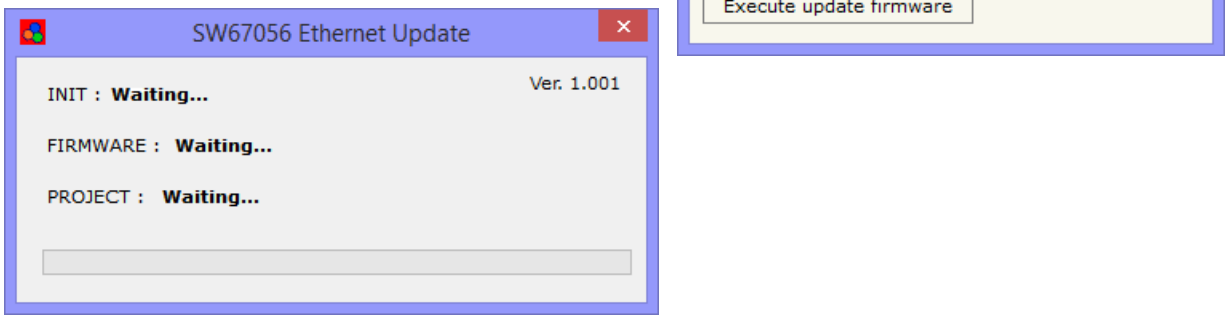



*Figure 7: "Update device" windows*

If you know the actual IP address of the device, you have to use this procedure:

- Turn on the Device with the Ethernet cable inserted;
- Insert the actual IP of the Converter;
- Press the "**Ping**" button, must appear "Device Found!";
- Press the "**Next**" button;
- Select which operations you want to do;
- Press the "**Execute update firmware**" button to start the upload;
- When all the operations are "OK" the device automatically goes at Normal Mode.

At this point the configuration/firmware on the device is correctly update.

Note:
When you install a new version of the software, if it is the first time it is better you do the update of the Firmware in the HD67056-B2-xxx device.

Note:
When you receive the device, for the first time, you also have to update the Firmware in the HD67056-B2-xxx device.

Warning:
If Fig. 8 appears when you try to do the Update try these points before seeking assistance:

- Try to repeat the operations for the updating;
- Try with another PC;
- Try to restart the PC;
- If you are using the program inside a Virtual Machine, try to use in the main Operating System;
- If you are using Windows Seven or Vista or 8, make sure that you have the administrator privileges;
- Take attention at Firewall lock;
- Check the LAN settings.

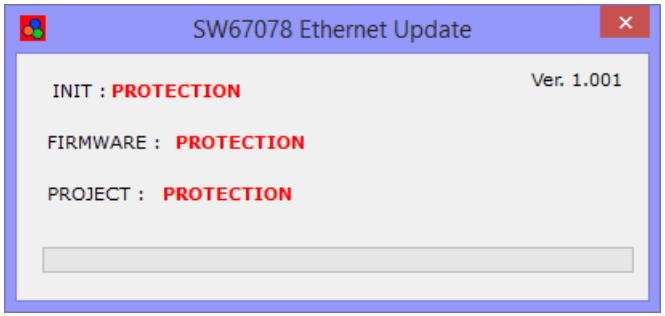



*Figure 8: "Protection" window*

In the case of HD67078-B2-xxx you have to use the software "SW67056": www.adfweb.com\download\filefold\SW67056.zip.

**UPDATE DEVICE (HD67056-MSTP-xxx serie):**

By pressing the "**Update Device**" button it is possible to load the created Configuration into the device; and also the Firmware, if is necessary.

If you don't know the actual IP address of the device you have to use this procedure:

- Turn off the Device;
- Put Dip2 of 'Dip-Switch B' at ON position;
- Turn on the device
- Connect RS232 Null Modem Cable form your PC to the Converter;
- Select the "**COM port**" and press the "**Connect**" button;
- Press the "**Next**" button;
- Select which operations you want to do;
- Press the "**Execute update firmware**" button to start the upload;
- When all the operations are "OK" turn off the Device;
- Put Dip2 of 'Dip-Switch B' at OFF position;
- Disconnect the RS232 cable
- Turn on the device.

At this point the configuration/firmware on the device is correctly updated.

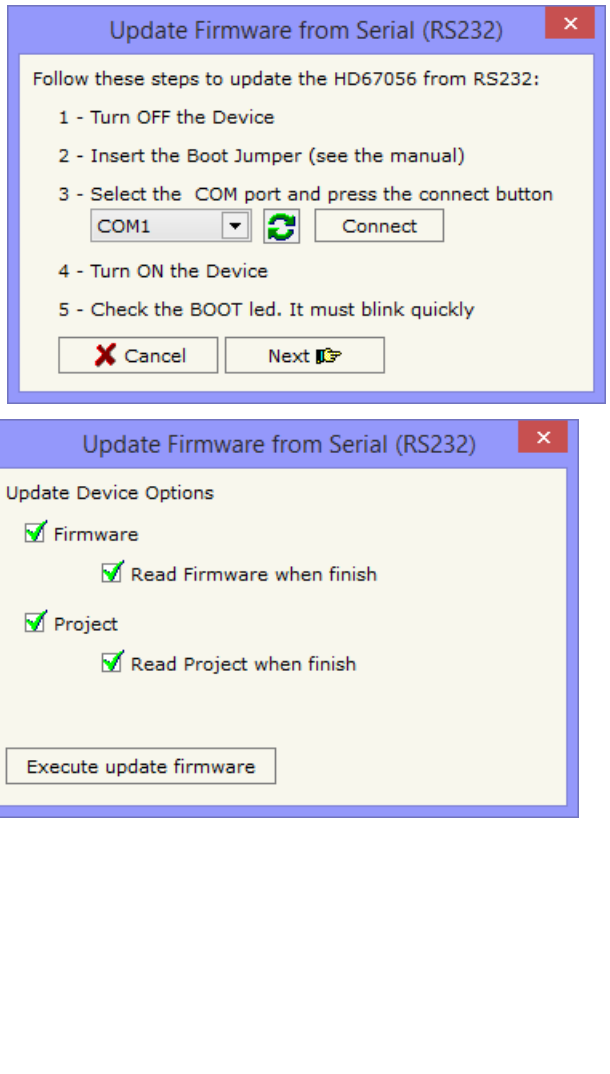



*Figure 9: "Update device" windows*

Note:
When you install a new version of the software, if it is the first time it is better you do the update of the Firmware in the HD67056-MSTP-xxx device.

Note:
When you receive the device, for the first time, you also have to update the Firmware in the HD67056-MSTP-xxx device.

Warning:

If the Fig. 10 appears when you try to do the Update try these points before seeking assistance:

- Try to repeat the operations for the updating;
- Try with another PC;
- Try to restart the PC;
- If you are using the program inside a Virtual Machine, try to use in the main OS;
- If you are using Windows Seven or Vista or 8, make sure that you have the administrator privileges;
- Take attention at Firewall lock;
- If you are using a USB←→RS232 converter try with a native COM port or change the converter (only for HD67053M series
- Check if the serial COM port selected is the correct one.

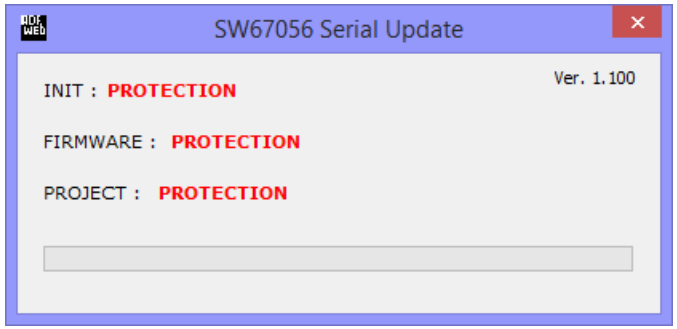
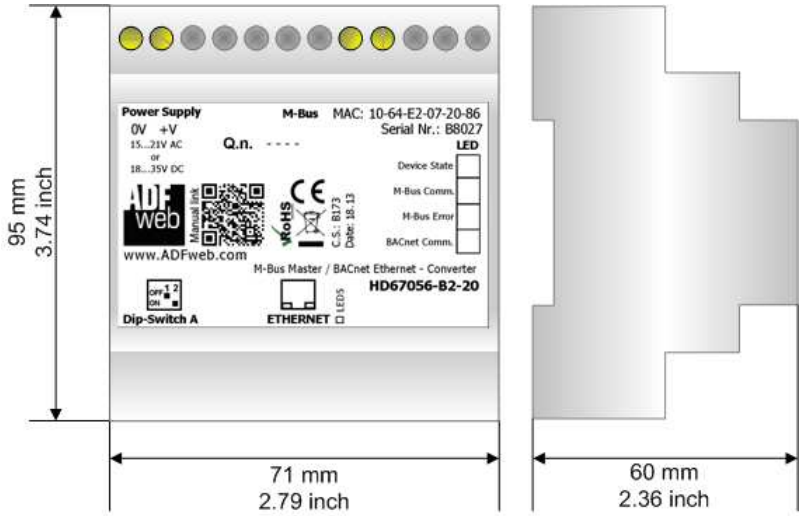



*Figure 10: "Protection"*

In the case of HD67056-MSTP-xxx you have to use the software "SW67056": www.adfweb.com\download\filefold\SW67056.zip.

**MECHANICAL DIMENSIONS:**



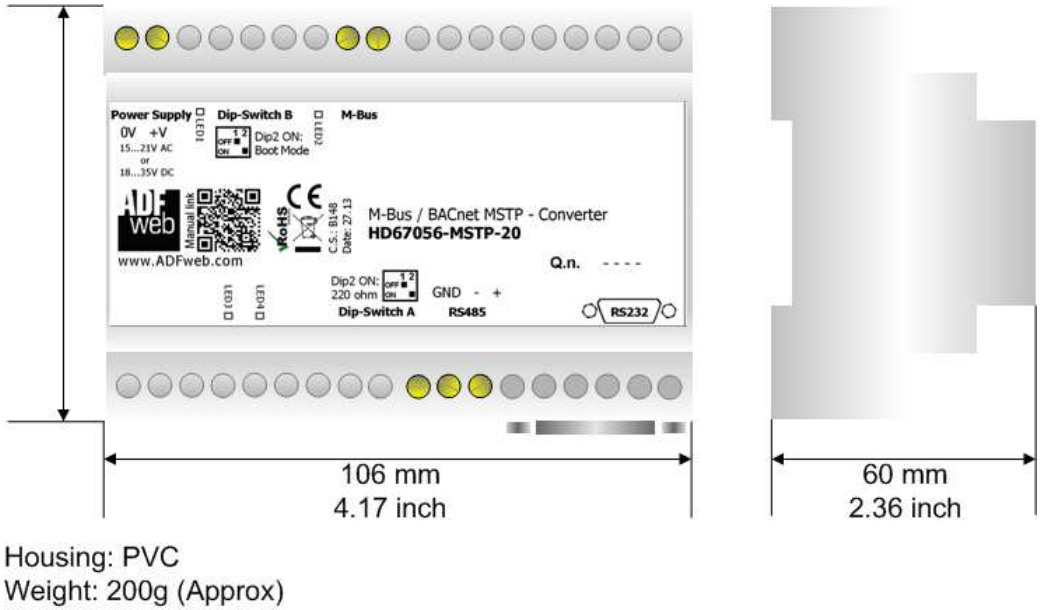




*Figure 11a: Mechanical dimensions scheme for HD67056-B2-xxx* *Figure 11b: Mechanical dimensions scheme for HD67056-MSTP-xxx*

**ORDERING INFORMATIONS:**

The ordering part number is formed by a valid combination of the following:

**HD67056 – B 2 – xxx**

**Maximum number of slaves supported**
20: up to 20 standard slaves (1.5mA consumption) connected to M-Bus
40: up to 40 standard slaves (1.5mA consumption) connected to M-Bus
80: up to 80 standard slaves (1.5mA consumption) connected to M-Bus
160: up to 160 standard slaves (1.5mA consumption) connected to M-Bus
250: up to 250 standard slaves (1.5mA consumption) connected to M-Bus

**Connectors Type**
2: Fixed Screw Terminal

**Enclosure Type**
B: Modulbox 4M, 35mm DIN Rail mounting

**Device Family**
HD67056: M-Bus Master / BACnet - Converter

| | | | |
|---|---|---|---|
| Order Code: | **HD67056-B2-20** | **-** | Converter M-Bus Master / BACnet/IP Slave (up to 20 slaves connected to M-Bus) |
| Order Code: | **HD67056-B2-40** | **-** | Converter M-Bus Master / BACnet/IP Slave (up to 40 slaves connected to M-Bus) |
| Order Code: | **HD67056-B2-80** | **-** | Converter M-Bus Master / BACnet/IP Slave (up to 80 slaves connected to M-Bus) |
| Order Code: | **HD67056-B2-160** | **-** | Converter M-Bus Master / BACnet/IP Slave (up to 160 slaves connected to M-Bus) |
| Order Code: | **HD67056-B2-250** | **-** | Converter M-Bus Master / BACnet/IP Slave (up to 250 slaves connected to M-Bus) |
| Order Code: | **HD67056-MSTP-20** | **-** | Converter M-Bus Master / BACnet MS/TP Slave (up to 20 slaves connected to M-Bus) |
| Order Code: | **HD67056-MSTP-40** | **-** | Converter M-Bus Master / BACnet MS/TP Slave (up to 40 slaves connected to M-Bus) |
| Order Code: | **HD67056-MSTP-80** | **-** | Converter M-Bus Master / BACnet MS/TP Slave (up to 80 slaves connected to M-Bus) |
| Order Code: | **HD67056-MSTP-160** | **-** | Converter M-Bus Master / BACnet MS/TP Slave (up to 160 slaves connected to M-Bus) |
| Order Code: | **HD67056-MSTP-250** | **-** | Converter M-Bus Master / BACnet MS/TP Slave (up to 250 slaves connected to M-Bus) |

**ACCESSORIES:**

| | | | |
|---|---|---|---|
| Order Code: | **APW020** | - | Power Supply for M-Bus Master device that supports up to 20 Slaves |
| Order Code: | **APW040** | - | Power Supply for M-Bus Master device that supports up to 40 Slaves |
| Order Code: | **APW080** | - | Power Supply for M-Bus Master device that supports up to 80 Slaves |
| Order Code: | **APW160** | - | Power Supply for M-Bus Master device that supports up to 160 Slaves |
| Order Code: | **APW250** | - | Power Supply for M-Bus Master device that supports up to 250 Slaves |

**DISCLAIMER:**

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Disposal of old electrical and electronic equipment (as in the European Union and other European countries with separate collection systems).

This symbol on the product or on its packaging indicates that this product may not be treated as household rubbish. Instead, it should be taken to an applicable collection point for the recycling of electrical and electronic equipment. If the product is disposed correctly, you will help prevent potential negative environmental factors and impact of human health, which could otherwise be caused by inappropriate disposal. The recycling of materials will help to conserve natural resources. For more information about recycling this product, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

**RESTRICTION OF HAZARDOUS SUBSTANCES DIRECTIVE**

The device respects the 2002/95/EC Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (commonly referred to as Restriction of Hazardous Substances Directive or RoHS).

**CE MARKING**

The product conforms with the essential requirements of the applicable EC directives.

**WARRANTIES AND TECHNICAL SUPPORT:**

For fast and easy technical support for your ADFweb.com SRL products, consult our internet support at www.adfweb.com.
Otherwise contact us at the address support@adfweb.com

**RETURN POLICY:**

If while using your product you have any problem and you wish to exchange or repair it, please do the following:

- Obtain a Product Return Number (PRN) from our internet support at www.adfweb.com. Together with the request, you need to provide detailed information about the problem.
- Send the product to the address provided with the PRN, having prepaid the shipping costs (shipment costs billed to us will not be accepted).

If the product is within the warranty of twelve months, it will be repaired or exchanged and returned within three weeks. If the product is no longer under warranty, you will receive a repair estimate.

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